

REMARKS

Applicants respectfully request favorable reconsideration of the subject patent application, particularly in view of the above Amendment and the following remarks.

Applicants have amended Claim 1 of the subject application by including the limitation that the structure resulting from the claimed method is an anode electrode. Applicants respectfully urge that this amendment is fully supported throughout the application, including the preamble to Claim 1, which indicates that the claimed method is for producing an anode, and, thus, incorporates no new subject matter into the application. Applicants further respectfully urge that there is no additional fee for this amendment because the number of independent claims and the total number of claims remain unchanged.

Claims 1-14 are pending in the subject application. Claims 1-3,7 and 8 have been rejected; Claims 4-6 and 9-14 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 4-6 and 11-14 are indicated to contain allowable subject matter on the basis that they recite limitations which limit the porous matrix material/powder mixture to an electrode structure and not an electrode support structure or the electrolyte itself as shown in the

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prior art. Regarding Claims 9 and 10, the Examiner has indicated that the recitation “said porous YSZ layer is impregnated with ceria” would not be applicable to an electrode support structure such as taught by the prior art.

Applicants, having reviewed the status of the claims as indicated by the Examiner, are confused as to the actual status of the claims. The basis for this confusion is the fact that Claims 9-14 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and the further fact that Claim 11 is, in fact, an independent claim. If Claim 11 contains allowable subject matter as indicated by the Examiner, it is Applicants’ understanding that Claim 11 and all claims dependent therefrom, i.e. Claims 12-14, are actually allowed. For the purpose of this response, Applicants are presuming that Claims 11-14 are allowable as recited based upon the reasons for allowability stated by the Examiner. In a telephone interview conducted with the Examiner on 04 August 2003, the Examiner confirmed that Claim 11 and all claims dependent therefrom are, in fact, allowed.

Claim 8 has been objected to under 35 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim, in the instant case, Claim 1. The Examiner has indicated that Applicants are required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent

form, or rewrite the claim(s) in independent form. The Examiner has indicated that Claim 8 recites that the “impregnated porous YSZ layer is calcined”, which limitation the Examiner argues does not appear to further limit parent Claim 1 in that Claim 1 already recites calcining and impregnating the porous YSZ layer. Applicants respectfully urge that Claim 8 is, in fact, in proper dependent form as currently recited. In accordance with the recitation of Applicants’ claimed invention in Claim 1, the steps involve 1) forming a porous matrix material/powder mixture, 2) forming the mixture into a porous YSZ layer, 3) calcining the porous YSZ layer, and 4) impregnating the porous YSZ layer with a metal-containing salt solution. Thus, the calcination step recited in Claim 1 occurs *before* the porous YSZ layer is impregnated with a metal-containing salt solution. The limitation recited in Claim 8 is *an additional calcination step*, which is carried out *after* the calcined porous YSZ layer has been impregnated with the metal-containing salt solution. Accordingly, Applicants respectfully urge that Claim 8 does, in fact, further limit Claim 1, from which Claim 8 depends, from which it follows that Claim 8 is in proper dependent form.

The invention claimed by Applicants is a method for preparation of an anode for a solid oxide fuel cell in which a porous matrix material is mixed with a yttria-stabilized-zirconia (YSZ) powder, forming a porous matrix material/powder mixture, which mixture is then formed into a porous YSZ layer. The porous YSZ layer

is then calcined, after which the calcined porous YSZ layer is impregnated with a metal-containing salt solution, *thereby forming an anode electrode*. For the reasons set forth herein below, Applicants respectfully urge that the prior art relied upon by the Examiner for rejection of claims pending in the subject application neither teaches nor suggests the invention claimed by Applicants.

Claims 1-3, 7 and 8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Rossing et al., U.S. Patent 4,598,028 (hereinafter "the Rossing et al. patent") in view of Soma et al. , U.S. Patent 5,411,767 (hereinafter "the Soma et al. patent") and Kawasaki et al., U.S. Patent 5,358,735 (hereinafter "the Kawasaki et al. patent"). This rejection is respectfully traversed. The Rossing et al. patent teaches a method for producing a high temperature, solid electrolyte electrochemical cell having an electrode and a solid electrolyte disposed on a porous, sintered support material containing thermally stabilized zirconia powder particles and from about 3 wt % to about 45 wt. % of thermally stable oxide fibers in which a mixture of thermally stable zirconia powder particles and YSZ fibers is formed into a layer and calcined. *Nowhere does the Rossing et al. patent teach or suggest a method for producing an anode electrode as claimed by Applicants. Indeed, the Examiner has acknowledged this to be the case in stating the reasons for allowability of Claims 4-6 and 11-14.*

The Soma et al. patent is relied upon by the Examiner as demonstrating “art-recognized mutual equivalence” between calcia (sic)-stabilized zirconia powder and yttria-stabilized zirconia powder as utilized in the method of Applicants’ claimed invention. Applicants respectfully disagree with this assertion, particularly in view of the differences in application of the materials disclosed by the Soma et al. patent, and the application of the materials employed in the method of the invention claimed by Applicants, namely use in a fuel cell interconnector as taught by the Soma et al. patent as opposed to the use of materials in an electrode as claimed by Applicants. However, in view of the Examiner’s acknowledgment that the cited prior art does not teach or suggest a method in which a porous matrix material/powder mixture as claimed by Applicants is used to produce an electrode as claimed by Applicants, thereby rendering claims directed to an electrode allowable, Applicants respectfully urge that the Examiner’s assertions regarding “art-recognized mutual equivalence” and the teachings of the Soma et al. patent are moot.

The Kawasaki et al. patent is relied upon by the Examiner as teaching impregnation of a porous matrix material layer with nickel nitrate (a metal salt solution). The Kawasaki et al. patent teaches a method for producing a solid oxide film for a solid oxide fuel cell and, as already indicated by the Examiner, is distinguishable from the method of Applicants’ claimed invention on the basis of its lack of any teachings

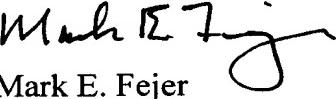
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directed to producing an electrode as claimed by Applicants. In view of the Examiner's acknowledgment that none of the cited prior art teaches or suggests a method for producing an electrode, thereby distinguishing Applicants' claimed invention therefrom, Applicants respectfully urge that the Examiner's arguments regarding the Kawasaki et al. patent are moot. Accordingly, Applicants respectfully urge that the Rossing et al. patent, the Soma et al. patent and the Kawasaki et al. patent, alone or in combination, do not render Applicants' claimed invention obvious in the manner required by 35 U.S.C. 103(a).

Conclusion

Applicants intend to be fully responsive to the outstanding Office Action. If the Examiner detects any issue which the Examiner believes Applicants have not addressed in this response, Applicants urge the Examiner to contact the undersigned. Applicants sincerely believe that this patent application is now in condition for allowance and, thus, respectfully request early allowance.

Respectfully submitted,


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